

INTEGRATED SUPPORT ENVIRONMENT (ISE) ELEMENT USERS GUIDE

(Deliverable 0424)
(Revision 1)

**Interface Analysis Data Base
(IADB)**

Volume 4 of 6

March 11, 1998

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1.1 Interface Analysis Database (IADB) Design

The Interface Analysis Database (IADB) facilitates the capture and analysis of potentially conflicting interface specifications derived from multiple sources. The basic approach is to manage a hierarchy of document, interface, and data item definitions and specifications, which are manually extracted from source documents and entered into the database. Analysts use predefined queries and formats in the IADB to generate reports documenting the completeness and consistency of the specifications, both within and between documents. The IADB supports concurrent entry and analysis of interface specifications by multiple users. All document titles, component/element/system names, organization names, and data item class names are stored in tables and can be created, edited and deleted through the IADB user interface.

Interface analysis is supported at both the interface requirements document (IRD) and interface control document (ICD) levels. At the IRD level, IRDs are analyzed for internal consistency and completeness, as well as for consistency with other comparably detailed documents. To support internal consistency analysis, each IRD is divided into three subsections: requirements, interface chart (i.e., table), and interface diagram. Separate interface and data item specifications are maintained for each subsection of each IRD. For the purpose of analyzing consistency between IRDs, and between IRDs and other documents, the requirements subsection is used as the baseline specification. The IADB enables analysts to electronically import and link IRD requirements to the data item specifications to which each requirement pertains, assuring the accuracy of the data item specifications with respect to the source requirements. To manage inconsistent names for data items between source documents, analysts specify alias, sub-item and subclass relationships between names using an integrated data dictionary.

To support end-to-end consistency and completeness analysis at the IRD level, the IADB supports the association of component/element/system input-to-output data flows via intermediate, analyst-defined functions. This is accomplished via the following steps:

1. The analyst electronically imports the IRD requirements.
2. The analyst associates the imported requirements with the corresponding source document title and version.
3. For each source document, the analyst associates each requirement with the component(s)/element(s)/system(s) to which the requirement applies.
4. For each component/element/system, the analyst defines the functions provided and associates each requirement with one or more functions.
5. For each component/element/system and function, the analyst associates input and output data flows.

Once the input-to-output relationships are established, they are used to generate end-to-end data communications, processing and storage flows. This supports verification of the logical consistency and completeness of the interface specifications on an end-to-end basis.

At the ICD level, the IADB supports the following types of consistency and completeness analyses:

- Consistency of each ICD with the parent IRD(s)
- Internal consistency of each ICD
- Internal completeness of each ICD

The precise methodology and IADB user interface design for ICD-level analysis is TBD. As we define our detailed approach, we will update this document accordingly.

1.1.1 IADB Installation and Startup

1.1.2 IADB GUI Design

Exhibit 1.1.2-1 depicts the hierarchy of major windows and dialogue boxes for the IADB.

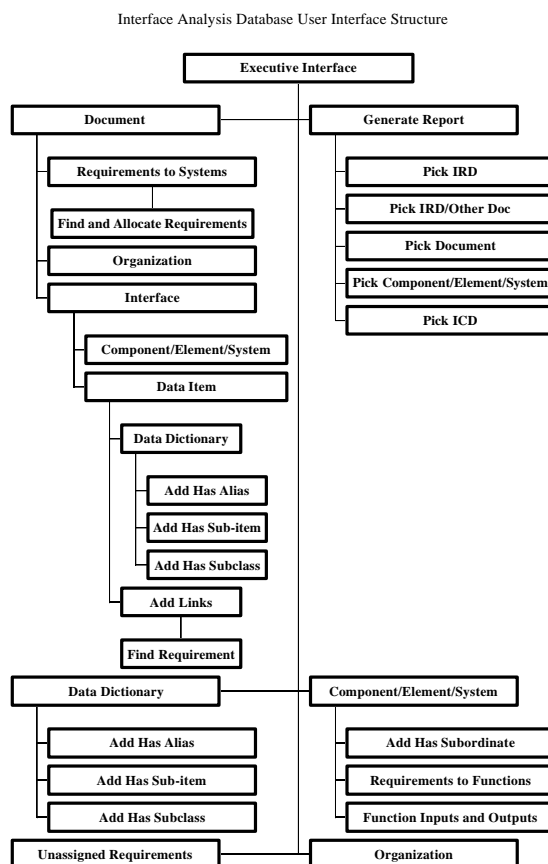


Exhibit 1.1.2-1 IADB User Interface Hierarchy

The following subsections detail the major windows and dialogue boxes of the IADB user interface.

1.1.2.1 IADB Executive Interface Screen

The Executive Interface Screen opens automatically when the IADB application is launched. The Executive Interface provides the user with the top-level choices within the IADB, including the following:

- Create, browse and edit interface specifications, including document definitions, interfaces, data item specifications, and links to requirements
- Generate any of a variety of consistency and completeness reports
- Create, browse and edit data item class definitions and interrelationships
- Associate requirements with source documents
- Create, browse and edit component/element/system definitions
- Create, browse and edit organization definitions

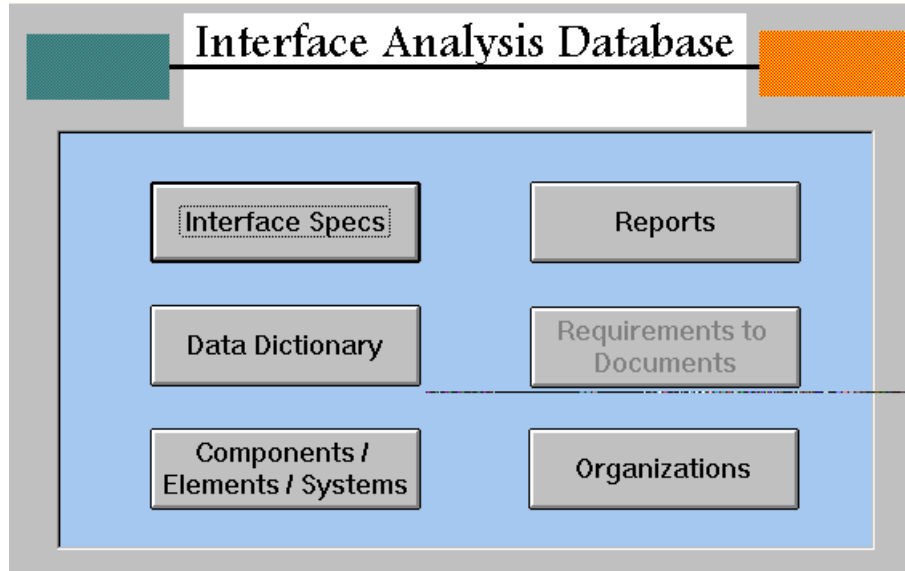


Exhibit 1.1.2-2 IADB Executive Interface Screen

BUTTONS:

| Button | Action |
|---------------------------------|--|
| Interface Specs | Opens Document screen |
| Reports | Opens Generate Report screen |
| Data Dictionary | Opens Data Dictionary (Data Item Class) screen |
| Requirements to Documents | Opens Unassigned Requirements screen (enabled only when Requirements table contains unassigned requirements) |
| Components / Elements / Systems | Opens Component/Element/System screen |
| Organizations | Opens Organization screen |

1.1.2.2 IADB Documents Screen

The Documents Screen enables creation, browsing and editing of document definitions, browsing and deletion of associated interfaces, and opening of the Requirements to Systems, Organizations, and Interface screens.

Documents

Document

New New Version Save Reset Reqmts to Systems

Pick Title: Func. & Perf. Reqmts Spec. for the ECS Pick Date: 6/2/94

Title: Func. & Perf. Reqmts Spec. for the ECS ID: 57

Date: 6/2/94 Type: ESDIS F&PR

Doc. No. 423-41-02 Status: Yes New Org.

IVV Lib. No. 940602.b002 Mng Org.: Code 505/ESDIS

Interfaces:

New Open Delete

| From: | To: | Status: |
|------------------|------|---------|
| EOS Pr. Scientst | ECS | |
| FDF | ECS | |
| NCC | ECS | |
| ECS | NCC | |
| ECS | EDOS | |
| EDOS | ECS | |
| Earth Probe msn. | ECS | |
| EPDSs | ECS | |
| S/C Simulators | ECS | |
| SDVF | ECS | |

Exhibit 1.1.2-3 IADB Document Screen

FIELDS:

| Field | Data Type | Source |
|--------------|---|--|
| Pick Title | text | document titles |
| Pick Date | date/time | document dates given title |
| Title | text box | selected title |
| ID | integer | selected document ID |
| Date | date/time | selected date |
| Type | text | selected document type |
| Doc No. | text | selected document number |
| Status | text | selected document status |
| IVV Lib. No. | text | selected document IVV library number |
| Mng. Org. | displays text (organization name) stores integer (organization ID) | organization linked to selected document |
| From | text | component/element/system ID/name |
| To | text | component/element/system ID/name |
| Status | text | TBD |

BUTTONS:

| Button | Action |
|-----------------|--|
| New [Document] | Clears document screen for new document definition |
| New Version | Opens a document selection screen to enable generation of a copy of its database contents as a point of departure for entering a new version |
| Save | Saves the current contents of the screen |
| Reset | Undoes unsaved changes to the screen |
| Requirements | Opens Requirements screen to display requirements associated with current document |
| New Org. | Opens Organization screen to enable entry of a new organization definition |
| New [Interface] | Opens Interface screen for entry of a new interface definition |
| Open | Opens Interface screen to selected interface |
| Delete | Deletes selected interface definition and associated data items |

1.1.2.3 IADB Organization Screen

The Organization Screen enables the creation, browsing and editing of organization definitions.

Exhibit 1.1.2-4 IADB Organization Screen

FIELDS:

| Field | Data Type | Source |
|-------------------|-----------|-------------------|
| Organization Name | Text | Organization name |
| Organization ID | Integer | Organization ID |

BUTTONS:

| Button | Action |
|--------|---|
| New | Clears screen for new organization definition |
| Save | Saves the current contents of the screen |
| Reset | Undoes unsaved changes to the screen |

1.1.2.4 IADB Unassigned Requirements Screen

The Unassigned Requirements Screen is used to associate imported requirements with the appropriate source document. The approach is to import one set of requirements at a time into the Tempreq table, copy the requirements into the Requirements table, and then open the Unassigned Requirements screen from the Executive Interface and select the appropriate source document.

Exhibit 1.1.2-5 IADB Unassigned Requirements Screen

FIELDS:

| Field | Data Type | Source |
|------------|-----------|---|
| Pick Title | Text | Document titles |
| Pick Date | Date/time | Document dates given title |
| Req_title | text | programmatic title for requirement |
| Req_text | memo | requirement text |
| Req_type | text | functional, performance, operational, interface |

BUTTONS:

| Button | Action |
|------------|--|
| Assign All | Assigns requirements to selected document |
| Cancel | Closes the screen without assigning requirements to a document |

1.1.2.5 IADB Requirements to Systems Screen

This screen enables the analyst to associate each requirement from a given document with the components, elements, and/or systems to which the requirement applies.

Form: RequirementsToSystems

Title: Date:

☐ Show only unallocated requirements **Find and Allocate...**

| Req ID | Description | Type | ID |
|----------|--|------------|-----|
| AM1-0020 | The EOC shall have the capability to send (via EDOS/Ecom and the SN,GN,DSN, or WOTS) and the AM-1 s/c shall have the | functional | 965 |
| AM1-0030 | The EOC shall have the capability to send (via EDOS/Ecom and the SN, GN,DSN, or WOTS) and the AM-1 s/c shall have the | functional | 966 |
| AM1-0050 | The AM1 s/c shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs | functional | 967 |
| AM1-0070 | The AM1 s/c shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs | functional | 968 |
| AM1-0090 | The AM1 s/c shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs | functional | 969 |
| AM1-0120 | The EOC shall have the capability to send and the AM1 s/c shall have the capability to receive s/c cmds in CCSDS CLTUs (as | functional | 970 |
| AM1-0125 | The AM1 s/c shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs | functional | 971 |
| AM1-0130 | The AM1 s/c shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs | functional | 972 |

Allocated To Components/Elements/Systems

| Comp/Elem/System | Type |
|------------------|---------|
| AM-1 S/C | Element |

Available Components/Elements/Systems

| Comp/Elem/System | Type |
|------------------|-----------|
| ADCs/ODCs | Other |
| algorithm devel. | Element |
| AM-1 Ins Tm | Other |
| AM-1 Proj. | Other |
| ASF DAAC | Component |
| ASTER GDS | Other |
| DAAC | Element |

Record: 1 of 39

Exhibit 1.1.2-6 IADB Requirements to Systems Screen

FIELDS:

| Field | Data Type | Source |
|--|---------------------------------|--|
| Title | Text | Document title |
| Date | Date/time | Document date |
| Req_title | text | programmatic title for requirement |
| Req_text | memo | requirement text |
| Req_type | text | functional, performance, operational, interface |
| Req_id | integer | internally assigned requirement ID |
| Allocated to Components / Elements / Systems | displays text stores integer | abbreviated names/types/IDs for components / elements / systems to which selected requirement has been allocated |

| | | |
|---|---------------------------------|--|
| Available Components / Elements / Systems | displays text stores integer | abbreviated names/types/IDs for components / elements / systems to which selected requirement has not been allocated |
|---|---------------------------------|--|

BUTTONS:

| Button | Action |
|--------------------------|--|
| Find and Allocate... | Opens the Find and Allocate screen from which requirements containing specific strings can be assigned to a specified component, element or system |
| Allocate (Left) Arrow | Allocates the selected requirement to the component, element or system selected in the “Available” list |
| Deallocate (Right) Arrow | Deallocates the selected requirement from the component, element or system selected in the “Allocated To” list |

1.1.2.6 IADB Interface Screen

The Interface Screen enables the creation and browsing of interfaces associated with a given document, the browsing and deletion of associated data items, the opening of the Component/Element/System and Data Item screens.

The screenshot shows a software window titled "Interfaces" with a sub-header "Interface". It contains three main sections: "Document", "Interface", and "Data Items".

Document Section: Includes fields for "Title" (containing "IPRD between ECS and AM-1 Projec") and "Date" (containing "5/15/95").

Interface Section: Contains buttons for "New Interface", "Save", and "Reset". Below these are "From:" and "To:" dropdown menus (showing "EOC" and "AM-1 S/C" respectively), a "New System" button, and a "Source Type:" dropdown menu (showing "Requirements").

Data Items Section: Features buttons for "New Item", "Open Item", and "Delete Item". Below these is a table with the following data:

| | Name: | Volume: | Rate: | Frequency: | Archive Period |
|--|----------------------|---------|-------|------------|----------------|
| | Commands-instruments | 0 | 0 | 0 | 0 E |
| | Commands-spacecraft | 0 | 0 | 0 | 0 E |

At the bottom of the window, there are two record navigation bars. The top one shows "Record: 1 of 2" and the bottom one shows "Record: 1 of 17".

Exhibit 1.1.2-7 IADB Interface Screen

FIELDS:

| Field | Data Type | Source |
|------------------|-----------|---------------------------------------|
| Title | text | Document title |
| Date | date/time | Document date |
| From | text | component/element/system ID/name |
| To | text | component/element/system ID/name |
| Source Type | text | "Requirements", "Chart", or "Diagram" |
| Name [Data Item] | text | data item class name |
| Volume | number | data flow volume |
| Volume Units | text | volume units |
| Rate | number | data flow rate |
| Rate Units | text | rate units |
| Frequency | number | data flow frequency |
| Frequency Units | text | frequency units |

| | | |
|----------------------|--------|----------------------|
| Archive Period | number | archive period |
| Archive Period Units | text | archive period units |

BUTTONS:

| Button | Action |
|---------------|--|
| New Interface | Clears screen for new interface definition |
| Save | Saves the current contents of the screen |
| Reset | Undoes unsaved changes to the screen |

1.1.2.7 IADB Component/Element/System Screen

This screen enables (1) the creation, browsing and editing of component/element/system definitions, (2) creation, editing and deletion of sub-element relationships between components, elements and systems, and (3) the opening of the Organization screen and Function Inputs and Outputs screen.

Exhibit 1.1.2-8 IADB Component/Element/System Screen**FIELDS:**

| Field | Data Type | Source |
|-------------------|---------------------------------|---------------------------------------|
| Full Name | text | component/element/system name |
| Abbreviation | text | component/element/system abbreviation |
| Type | text | component, element or system |
| ID | integer | component/element/system ID |
| Managing Org. | displays text stores integer | name/ID of the managing organization |
| Is Sub-element Of | displays text | name/ID of the parent |

| | | |
|------------------|---------------------------------|---|
| | stores integer | component/element/system |
| Has Sub-elements | displays text stores integer | names/IDs of the subordinate components/elements/systems |

BUTTONS:

| Button | Action |
|-----------------------|---|
| New | Clears screen for new component/element/system definition |
| Find | Opens a subordinate dialogue box to find a specified component/element/system |
| Save | Saves the current contents of the screen |
| Reset | Undoes unsaved changes to the screen |
| New Organization | Opens the Organization screen for entry of a new organization definition |
| Input/Output Analysis | Opens the Function Inputs and Outputs screen for the current component/element/system |

1.1.2.8 IADB Requirements to Functions Screen

This screen is used to associate a given component/element/system's requirements with analyst-defined functions, which in turn provide the basis for logically relating input and output data flows.

m. RequirementsToFunctions

Name: Type: System Abbreviation:

☐ Show only unallocated requirements ☐ Show only unallocated available functions

Find and Allocate...

| Requirement Description | Date | Function ID | Function Description |
|--|--------|-------------|------------------------------|
| resident EOS Project Scientist the Plan (LTSP) and updates as | 6/2/94 | EOSD1480 | ECS shall receive from the r |
| with the resident EOS Project of conflicts between observations of | 6/2/94 | EOSD1480 | EWGs Long Term Science |
| with the EOS spacecraft and with the EOS | 6/2/94 | EOSD1500 | ECS elements shall inter |
| to perform mission operations, including | 6/2/94 | EOSD1502 | Scientist for resolution |
| all use Ecom for data communications for | 6/2/94 | EOSD1505 | ECS shall interface w |
| ses of data. a. Production data sets (Level 0) | 6/2/94 | EOSD1510 | instruments in orde |
| s shall receive EOS spacecraft predicted orbit | 6/2/94 | EOSD1510 | ECS elements sh |
| st pass ephemeris determination data from the | 6/2/94 | EOSD1510 | the following by |
| ents shall provide the FDF with subsets of | 6/2/94 | EOSD1510 | ECS element |
| all housekeeping data related to the on-board | 6/2/94 | EOSD1510 | data and pr |
| | 6/2/94 | EOSD1510 | ECS elem |
| | 6/2/94 | EOSD1510 | spacecra |

☐ Show only unallocated available functions

To Functions Available Functions New Function Allocated

Transmit Data
Store Data
Process Data
Sit On Your Hands

Delete Function

Record 1 of 114

Exhibit 1.1.2-9 IADB Requirements to Functions Screen**FIELDS:**

| Field | Data Type | Source |
|---------------------|-----------|--------------------------|
| System Abbreviation | text | component/element/system |

| | | |
|------------------------|--------------|--|
| | | abbreviation |
| Type | text | component, element or system |
| Allocated to Functions | list of text | Functions associated with current component/element/system and currently selected requirement |
| Available Functions | list of text | Functions associated with current component/element/system but not with currently selected requirement |
| New Function | text | user-defined function assigned to current component/element/system |
| Req_id | integer | internally assigned requirement ID |
| Req_text | memo | requirement text |
| Req_type | text | functional, performance, operational, interface |

BUTTONS:

| Button | Action |
|------------------------------------|--|
| Find and Allocate... | Opens the Find and Allocate screen from which requirements containing specific strings can be assigned to a specified function |
| Allocate (Left) Arrow | Allocates the selected requirement to the function selected in the “Available” list |
| Deallocate (Right) Arrow | Deallocates the selected requirement from the function selected in the “Allocated To” list |
| Add Function (Left) Arrow | Associates a user-defined function with the current component/element/system, adding the function to the “Available” list |
| Delete Function (Trash Can) | Disassociates the function selected in the “Available” list from the current component/element/system and removes it from the “Available” list |
| Show Only Unallocated Requirements | When selected, displays only those requirements not already allocated to at least one function |
| Show Only Unallocated Functions | When selected, displays only those available functions not already allocated to at least one requirement |

1.1.2.9 IADB Function Inputs and Outputs Screen

The Function Inputs and Outputs screen enables the analyst to associate input and output data flows with each function for a given component/element/system.

Exhibit 1.1.2-10 IADB Function Inputs and Outputs Screen

FIELDS:

| Field | Data Type | Source |
|---------------------|--------------|--|
| System Abbreviation | text | component/element/system abbreviation |
| Type | text | component, element or system |
| Select Function | | |
| Req_id | integer | internally assigned requirement ID |
| Req_text | memo | requirement text |
| Req_type | text | functional, performance, operational, interface |
| Function | text | displays selected function name from upper portion of window |
| Assigned Inputs | list of text | names of data item classes that have been assigned as inputs to selected function |
| Possible Inputs | list of text | names of data item classes that are inputs to current component/element/system and which have not been assigned as inputs to selected function |
| Assigned Outputs | list of text | names of data item classes that have been assigned as outputs to selected |

| | | |
|------------------|--------------|---|
| | | function |
| Possible Outputs | list of text | names of data item classes that that are outputs of current component/element/system and which have not been assigned as outputs of selected function |

BUTTONS:

| Button | Action |
|-------------------------------------|--|
| Show Only Functions Without Inputs | When selected, displays only those functions to which no inputs have been assigned |
| Show Only Functions Without Outputs | When selected, displays only those functions to which no outputs have been assigned |
| Assign Input (Left) Arrow | Assigns the selected possible input to the selected function |
| De-assign Input (Right) Arrow | De-assigns the selected assigned input from the selected function |
| Only Unassigned Inputs | When selected, displays only those possible inputs that are not assigned to any functions |
| Assign Output (Left) Arrow | Assigns the selected possible output to the selected function |
| De-assign Output (Right) Arrow | De-assigns the selected assigned output from the selected function |
| Only Unassigned Outputs | When selected, displays only those possible outputs that are not assigned to any functions |

1.1.2.10 IADB Data Item Screen

The Data Item Screen enables the (1) creation, browsing and editing of data items for a given document and interface, (2) browsing and deletion of links to requirements, and (3) the opening of the Data Dictionary and Add [requirement] Links screens.

Form: data Item

Document

Title: JRD between ECS and AM-1 Project Date: 5/15/95

Interface

From: AM-1 S/C To: EOC

Source Type: Requirements

Data Item

New Save Reset New Class Open Class

Name: RT s/c housekeeping tlm pkts Units

Mode: Nominal Volume: 0

Medium: Electronic Frequency: 0

Path: Ecom Rate: 0

Archival: 0

Comments:

Linked Requirements:

Add Links Delete Link

| Req ID: | req_text: | req_type: |
|----------|--|------------|
| AM1-0070 | The AM1 s/c shall have the capability to send (in CAD) | functional |
| AM1-0135 | The AM1 s/c shall have the capability to send (in CAD) | functional |

Record: 1 of 9

Exhibit 1.1.2-11 IADB Data Item Form Screen

FIELDS:

| Field | Data Type | Source |
|------------------|-----------|--|
| Title | text | Document title |
| Date | date/time | Document date |
| From | text | component/element/system ID/name |
| To | text | component/element/system ID/name |
| Source Type | text | "Requirements", "Chart", or "Diagram" |
| Name [Data Item] | text | data item class name; entry of undefined name automatically adds name to data dictionary |
| Mode | text | operational mode, e.g., pre-launch, launch, nominal operations... |
| Medium | text | communications medium, e.g., voice, paper, electronic... |
| Path | text | electronic communications path, e.g., Ecom, NOLAN... |

| | | |
|----------------------|---------|---|
| Volume | number | data flow volume |
| Volume Units | text | volume units |
| Rate | number | data flow rate |
| Rate Units | text | rate units |
| Frequency | number | data flow frequency |
| Frequency Units | text | frequency units |
| Archive Period | number | archive period |
| Archive Period Units | text | archive period units |
| Comments | memo | comments between analysts |
| Req_id | integer | internally assigned requirement ID |
| Req_text | memo | requirement text |
| Req_type | text | functional, performance, operational, interface |

BUTTONS:

| Button | Action |
|-------------|---|
| New | Clears screen for new interface definition |
| Save | Saves the current contents of the screen |
| Reset | Undoes unsaved changes to the screen |
| New Class | Opens the Data Dictionary screen for entry of a new data item class |
| Open Class | Opens the Data Dictionary screen to the current data item class |
| Add Links | Opens the Add Requirement Links screen for creation of new requirement links |
| Delete Link | Deletes the link between the current data item and the currently selected requirement |

1.1.2.11 IADB Add Requirement Links Screen

This screen is opened from the Data Item screen to associate requirements from the current source document with the current data item specification. Find and Find Next buttons support the analyst in identifying potentially applicable requirements.

Form: Add Links

Find Find Next Create Link Done

Requirements

| Req ID: | req_text: | req_type: |
|----------|--|------------|
| AM1-0020 | The EOC shall have the capability to send (via EDOS/Eco | functional |
| AM1-0030 | The EOC shall have the capability to send (via EDOS/Eco | functional |
| AM1-0050 | The AM1 s/c shall have the capability to send (in CADU fo | functional |
| AM1-0090 | The AM1 s/c shall have the capability to send (in CADU fo | functional |
| AM1-0120 | The EOC shall have the capability to send and the AM1 s/ | functional |
| AM1-0125 | The AM1 s/c shall have the capability to send (in CADU fo | functional |
| AM1-0130 | The AM1 s/c shall have the capability to send (in CADU fo | functional |
| AM1-0140 | The SCS shall have the capability to send (in CADU forme | functional |
| AM1-0150 | The EOC shall have the capability to send and the SSIM s | functional |
| AM1-0160 | The SSIM shall have the capability to send and the EOC s | functional |
| AM1-0170 | The SSIM shall have the capability to send and the EOC s | functional |
| AM1-0200 | The SSIM shall have the capability to send and the EOC s | functional |
| AM1-0215 | The AM-1 s/c vendor shall have the capability to provide | functional |
| AM1-0220 | The ECS shall have the capability to provide and the MISI | functional |
| AM1-0225 | The AM-1 s/c vendor shall have the capability to provide | functional |
| AM1-0230 | The IST toolkit shall have the capability to accept data fro | functional |
| AM1-0240 | The IST toolkit shall have the capability to provide data to | functional |
| AM1-0270 | The AM-1 SDVF shall have the capability to send and EC | functional |
| AM1-0280 | ECS shall have the capability to send and the AM-1 SDVF | functional |
| AM1-0310 | The ECS contractor shall provide and the AM-1 s/c vendc | functional |
| AM1-0315 | The ECS contractor shall provide and the AM-1 instrumen | functional |
| AM1-0320 | The AM-1 s/c vendor shall provide and the ECS contractc | functional |
| AM1-0330 | The AM-1 instrument teams shall provide and the ECS coi | functional |
| AM1-0340 | The AM-1 project shall have the capability to provide and | functional |

Record: 8 of 37

Record: 559 of 559

Exhibit 1.1.2-12 IADB Add Requirement Links Screen**FIELDS:**

| Field | Data Type | Source |
|----------|-----------|---|
| Req_id | integer | internally assigned requirement ID |
| Req_text | memo | requirement text |
| Req_type | text | functional, performance, operational, interface |

BUTTONS:

| Button | Action |
|-------------|---|
| Find | Opens subordinate screen for specifying a character string to search for and a requirement field to search in |
| Find Next | Finds the next occurrence of the specified string in the specified field |
| Create Link | Links the currently selected requirement to the current data item specification |
| Done | Closes the Add Requirement Links screen |

1.1.2.12 IADB Data Dictionary Screen

The Data Dictionary (Data Item Class) screen enables analysts to create, browse and edit data item class definitions, including the creation and deletion of alias, sub-item and subclass relationships between classes.

The screenshot shows the 'Data Item Class' form in the IADB Data Dictionary. The form has a title bar 'Data Item Classes' and a main title 'Data Item Class'. It includes buttons for 'New Class', 'Find...', 'Save', and 'Reset'. The 'Class Name' field contains 'Return-link telemetry data', 'Status' is 'baseline', and 'Class ID' is '44'. There are sections for 'Is Sub-item Of' and 'Is Subclass Of' with dropdown menus. Below these are three panels: 'Has Aliases', 'Has Sub-items', and 'Has Subclasses'. Each panel has 'New' and 'Delete' buttons and a list of related classes. The 'Has Aliases' panel shows 'Spacecraft telemetry data' and 'Telemetry'. The 'Has Sub-items' panel is empty. The 'Has Subclasses' panel shows 'CTIU tlm pkts', 'Engineering data', 'Instr. microproc. mem. dump tlm', 'SCC tlm pkts', and 'Telemetry-instrument'. At the bottom, there is a record navigation bar showing 'Record: 2 of 606'.

Exhibit 1.1.2-13 IADB Data Dictionary Screen

FIELDS:

| Field | Data Type | Source |
|----------------|---------------------------------|---|
| Class Name | text | data item class name |
| Status | text | baseline, alias or TBD |
| Class ID | integer | internally assigned data class ID |
| Is Alias For | displays text stores integer | Name/ID of the class for which the current class is an alias; visible only when status is TBD or alias |
| Is Sub-item Of | displays text stores integer | Name/ID of the class for which the current class is a sub-item; visible only when status is TBD or baseline |
| Is Subclass Of | displays text stores integer | Name/ID of the class for which the current class is a subclass; visible only when status is TBD or baseline |
| Has Aliases | displays text stores integer | Names/IDs of the classes that are aliases of the current class; visible only when status is TBD or baseline |
| Has Sub-items | displays text stores integer | Names/IDs of the classes that are sub-items of the current class; |

| | | |
|----------------|---------------------------------|---|
| | | visible only when status is TBD or baseline |
| Has Subclasses | displays text stores integer | Names/IDs of the classes that are subclasses of the current class; visible only when status is TBD or baseline |

BUTTONS:

| Button | Action |
|-----------------|---|
| New Class | Clears the screen for entry of a new data item class definition |
| Find | Opens subordinate screen for specifying the name of a data item class for which to search |
| Save | Saves the current contents of the screen |
| Reset | Undoes unsaved changes to the current data item class |
| New Aliases | Opens the Add Aliases screen to select additional aliases for the current class |
| Delete Alias | Deletes the currently selected alias relationship |
| New Sub-items | Opens the Add Sub-items screen to select additional sub-items for the current class |
| Delete Sub-item | Deletes the currently selected sub-item relationship |
| New Subclasses | Opens the Add Subclasses screen to select additional subclasses for the current class |
| Delete Subclass | Deletes the currently selected subclasses relationship |

1.1.2.13 IADB Add Aliases/Add Sub-items/Add Subclasses Screen

The Add Aliases, Add Sub-items, and Add Subclasses screens enable analysts to create relationships between the current data item class on the data dictionary screen and other classes selected from the subordinate screen(s). Only the Add Aliases screen is shown here, as the three screens are virtually identical.

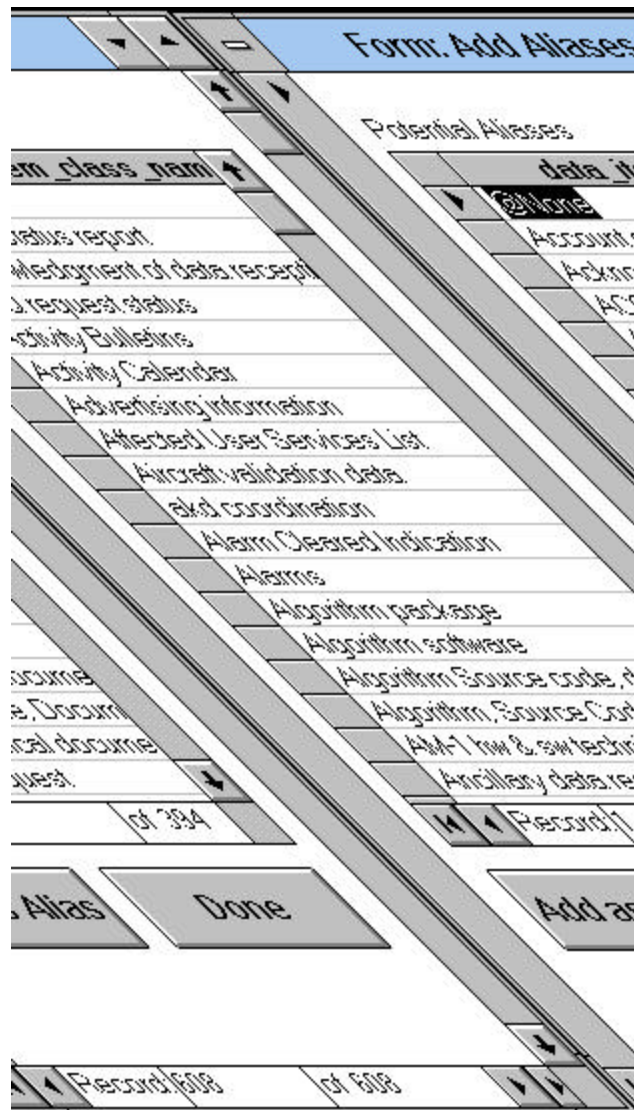


Exhibit 1.1.2-14 IADB Add Aliases Screen

FIELDS:

| Field | Data Type | Source |
|------------|-----------|--|
| Class Name | text | data item class names that are not already aliases for current data item class from Data Dictionary screen |

BUTTONS:

| Button | Action |
|--------------|--|
| Add as Alias | Creates an alias relationship between the current data item class from the Data Dictionary screen and the currently selected data item class in the Add Aliases screen, and removes the latter from the selection list |
| Done | Closes the Add Aliases screen |

1.1.2.14 IADB Generate Report Screen

This screen enables any of a variety of reports to be generated pertaining to the contents, consistency and completeness of the interface specifications and data dictionary.

Exhibit 1.1.2-15 IADB Generate Report Screen

BUTTONS:

| Button | Action |
|-----------------|--|
| Generate Report | Either generates the selected report directly (for general reports) or opens a subordinate screen from which the user selects the document, component/element/system, or data item class upon which the report is to be based. |

| | |
|--------|-----------------------------------|
| Cancel | Closes the Generate Report screen |
|--------|-----------------------------------|